Environmental Initiatives of North America, INC

May 10, 2014

Mr. & Mrs. Pringle:

I conducted an assessment of your residence located 6943 Middle Road in Caledonia, Wisconsin on May 6, 2014. The purpose of the visit was to assess the dust in the residence for the presence of coal-like and fly ash-like particles.

We collected dust from multiple interior surfaces and from the storm windows in several rooms. The samples were analyzed by both transmitted light, bright-field microscopy and by reflected light, dark-field microscopy. The transmitted light, bright-field microscopy is the common form of using a microscope where the light source is under the specimen. This type of microscopy works well to locate particles, but the true color of a particle cannot always be determined. Since the light is shining from below (which is "behind") the particle, larger particles will block the light and for silhouettes, masking their color. To truly view the color of a particle, the light must shine down from the top of the microscope with that light then reflecting back up to the observer. This is called reflected light microscopy. To get better contrast and sharper color resolution, the microscope can be setup to perform dark-field reflected light microscopy.

We viewed a water sample from snow that was reportedly previously tested and shown to have ~30% of the particles present being coal. *Pictures 1-4* are photographs taken through the ocular of the microscope showing particles that are likely coal particles both through transmitted and reflected light. A table of the sample results is provided after the signature block. Samples were then collected from the interior, lower sides of the storm windows in three bedrooms, and from dust on top of doors, shelves, a cabinet, and a television in the residence. Dark particles that resembled the coal-like particles from the water sample were present on all but one of the samples.

Environmental Initiatives routinely analyses dust samples in residences for fungal growth and abnormal particles. The levels of black particles observed were abnormally high and we did not observe other combustion sources within the residence that would account for the particles. These findings suggest that the coal that was previously identified by another testing firm in the outdoors has very likely penetrated into the residence and has settled into the dust.

If the client does not move from the residence and the treating physician is concerned of the occupants' exposures due to their sensitivities, the following recommendations are warranted:

1. Replace window with well-sealed units. Do not open windows unless necessary.
2. Thoroughly clean dust and debris from surfaces throughout the residence using damp rags and Swiffer-style mops. Repeatedly clean floors once a week using Swiffer-style mops.
3. Remove the basement carpeting, which cannot be readily cleaned of debris. Replace with a resilient floor covering, such as tile or laminate.
4. Consider installing an air-to-air exchanger that will provide mechanical ventilation. Install the exchanger to release the fresh outdoor air into the return ductwork for the air to then go through the furnace filter.
5. Replace the furnace filter at least once every three months.

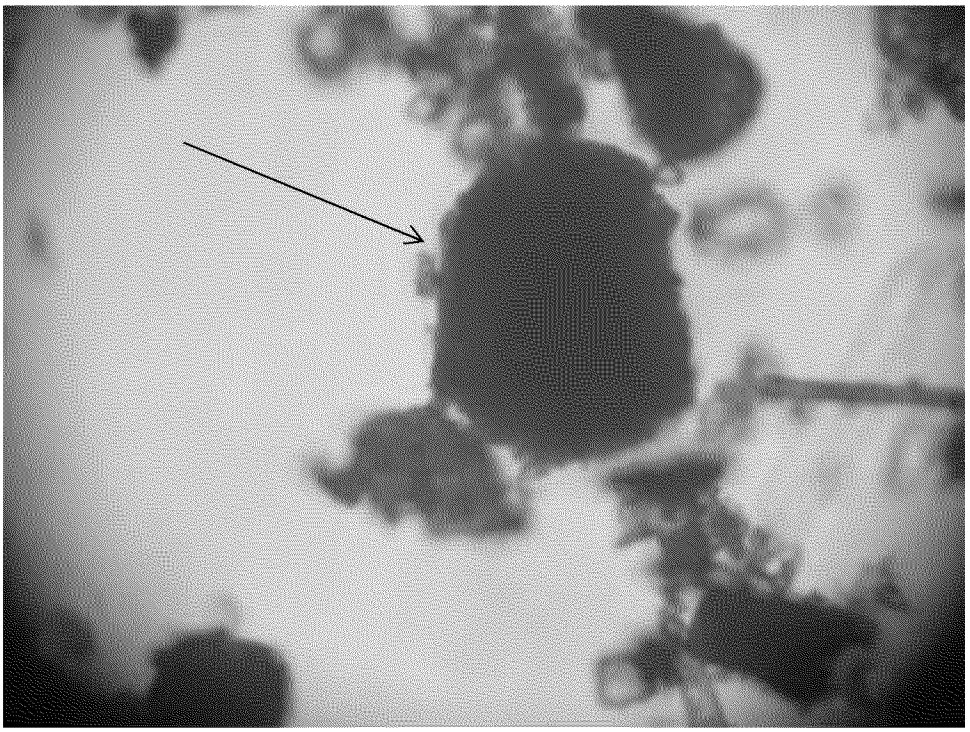
Please call me at 414-651-6653 with any questions you may have.

Sincerely,

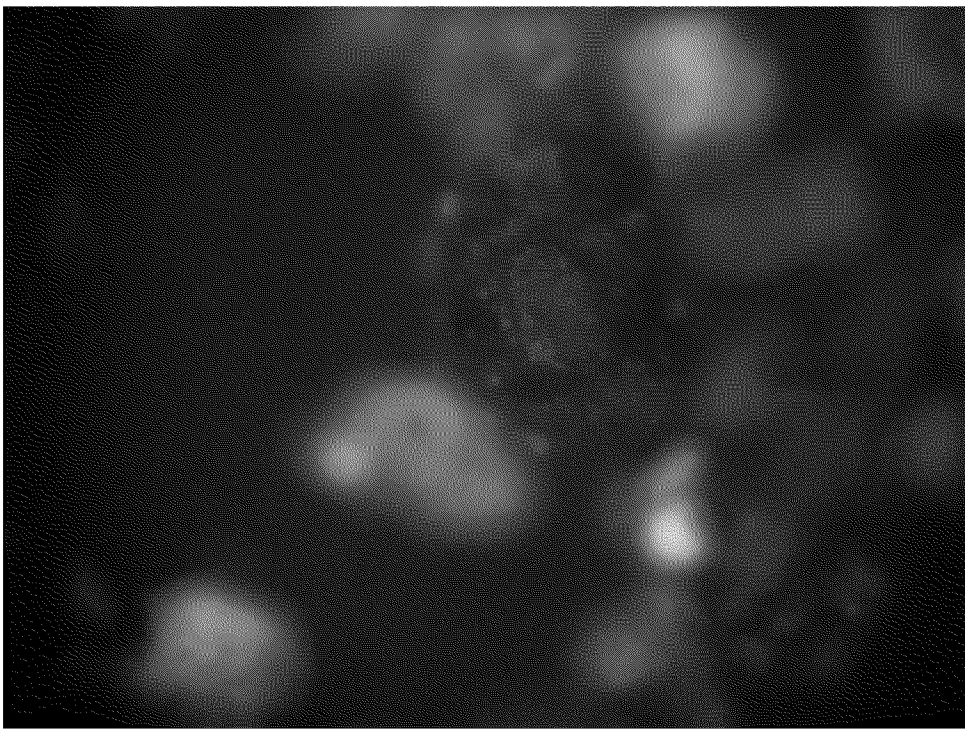
Cassidy Kuchenbecker, MS
Senior Project Consultant
Microbiologist

Analyses of Surface Samples

Sample Number	Location	Comments
05141C-01	North window, northwest bedroom	Coal-like particles present
0505141C-02	North window, northwest bedroom	Coal-like particles present
0505141C-03	West window, northwest bedroom	Coal-like particles present
0505141C-04	Dust on top of door in northwest bedroom	Coal-like particles present
0505141C-05	Dust on top of door in northwest bedroom	Coal-like particles present
0505141C-06	North window, north central bedroom	Coal-like particles present
0505141C-07	North central bedroom, top of door	Coal-like particles present
0505141C-08	North central bedroom, top of multiple surfaces	Coal-like particles not observed
0505141C-09	Northeast bedroom, top of shelf on north wall	Coal-like particles present
0505141C-10	Northeast bedroom, north window	Coal-like particles present
0505141C-11	Northeast bedroom, east window on horizontal portion	Coal-like particles present
0505141C-12	Top of cabinet in living room	Coal-like particles present
0505141C-13	Top of television in living room	Coal-like particles present

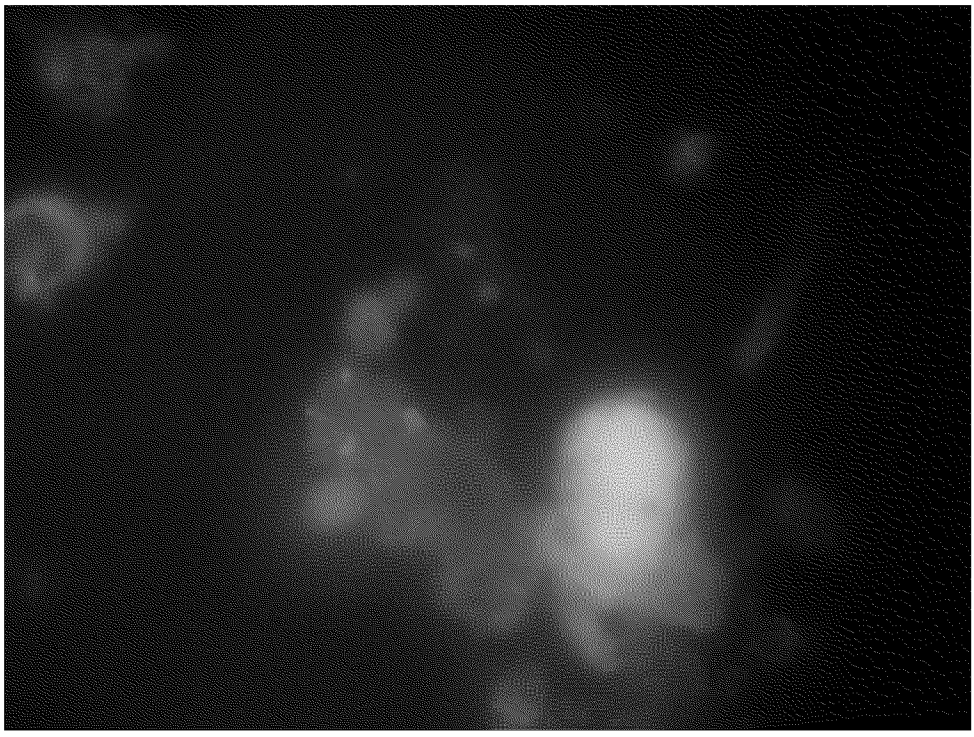


Picture 1: Coal-like particle from snow (water) sample with confirmed coal. Bright-field microscopy.

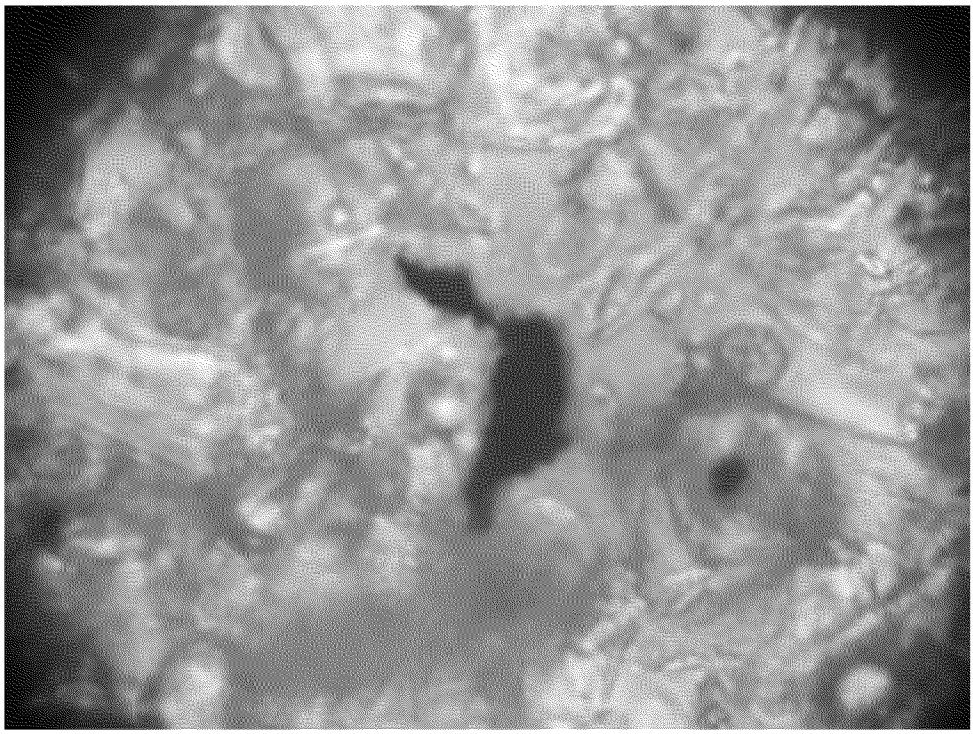


Picture 2: Same as Picture 1 with dark-field microscopy to show the true color of the particle.

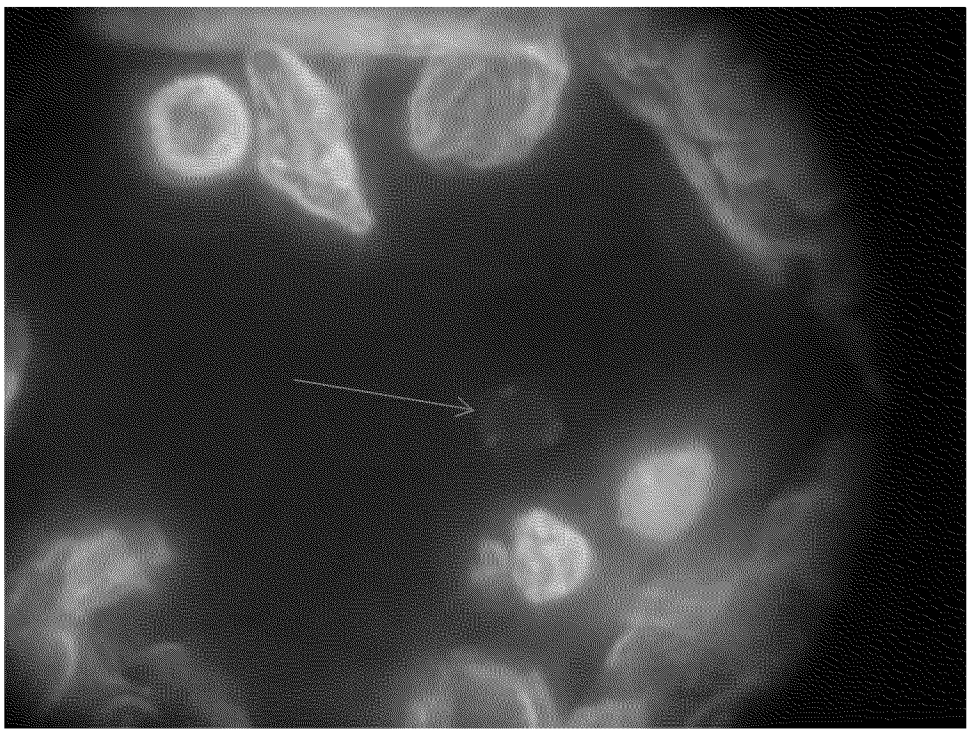
Picture 3: Coal-like particle from the snow (water) sample with confirmed coal. Bright-field microscopy.



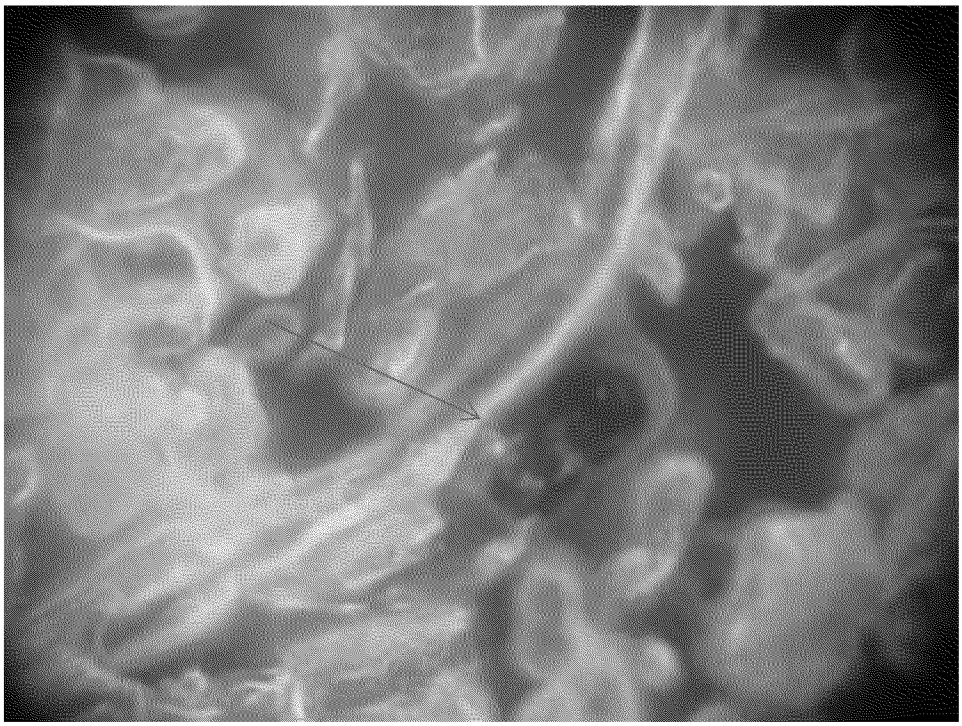
Picture 4: Same as Picture 3 with dark-field microscopy.



Picture 5: Coal-like particle on Sample 7 using bright-field microscopy.



Picture 6: Coal-like particle on Sample 7 using dark-field microscopy.



Picture 7: Coal-like particle on Sample 13 using dark-field microscopy.